



INSTALLATION, OPERATION, AND MAINTENANCE MANUAL
WELKER CHECK VALVE

MODEL

CV-1

DRAWING NUMBERS

AD021A[]

AD021AC

AD022A[]

MANUAL NUMBER

IOM-073

REVISION

Rev. E, 4/23/2018

TABLE OF CONTENTS

	SAFETY	3
1.	PRODUCT INFORMATION	4
1.1	Introduction	4
1.2	Product Description	4
1.3	Specifications	4
1.4	Equipment Diagram	5
2.	INSTALLATION & OPERATION	6
2.1	Before You Begin	6
2.2	Installation	6
3.	MAINTENANCE	7
3.1	Before You Begin	7
3.2	Maintenance	8
	APPENDIX	9
	A: Referenced or Attached Documents	9

IMPORTANT SAFETY INFORMATION

READ ALL INSTRUCTIONS



Notes emphasize information and/or provide additional information to assist the user.



Caution messages appear before procedures that could result in damage to equipment if not observed.



Warning messages appear before procedures that could result in personal injury if not observed.

This manual is intended to be used as a basic installation and operation guide for the Welker Check Valve, CV-1. For comprehensive instructions, please refer to the IOM Manuals for each individual component. A list of relevant component IOM Manuals is provided in Appendix A of this manual.

The information in this manual has been carefully checked for accuracy and is intended to be used as a guide for the installation, operation, and maintenance of the Welker equipment described in this manual. Correct installation and operation, however, are the responsibility of the end user. Welker reserves the right to make changes to this manual and all products in order to improve performance and reliability.

BEFORE YOU BEGIN

Read these instructions completely and carefully.

IMPORTANT - Save these instructions for local inspector's use.

IMPORTANT - Observe all governing codes and ordinances.

Note to Installer - Leave these instructions with the end user.

Note to End User - Keep these instructions for future reference.

Installation of this Check Valve is of a mechanical nature.

Proper installation is the responsibility of the installer. Product failure due to improper installation is not covered under the warranty.

If you received a damaged Check Valve, please contact a Welker representative immediately.

Phone: 281.491.2331

Address: 13839 West Belfort Street
Sugar Land, TX 77498

SECTION 1: PRODUCT INFORMATION

1.1 Introduction

We appreciate your business and your choice of Welker products. The installation, operation, and maintenance liability for this equipment becomes that of the purchaser at the time of receipt. Reading the applicable *Installation, Operation, and Maintenance (IOM) Manuals* prior to installation and operation of this equipment is required for a full understanding of its application and performance prior to use.*

If you have any questions, please call Welker at 1-281-491-2331.

**The following procedures have been written for use with standard Welker parts and equipment. Assemblies that have been modified may have additional requirements and specifications that are not listed in this manual.*

1.2 Product Description

The Welker CV-1 Check Valve is a ball-type valve designed to allow product flow in one direction only.

The ball in the standard CV-1 is spring-loaded to remain shut and will only operate once the upstream or inlet pressure exceeds the tension on the spring; this is referred to as the "cracking pressure." The CV-1 can be ordered without a spring for vertical installation; without a spring, gravity causes the CV-1 to remain shut until upstream or inlet pressure exceeds the downstream or outlet pressure. Shutoff of the liquid or gas is achieved in both styles when the upstream or inlet pressure falls below the downstream or outlet pressure and the ball seats on an O-ring, forming a positive seal.

Welker may custom design the CV-1 to suit the particular application and specifications of each customer.

1.3 Specifications



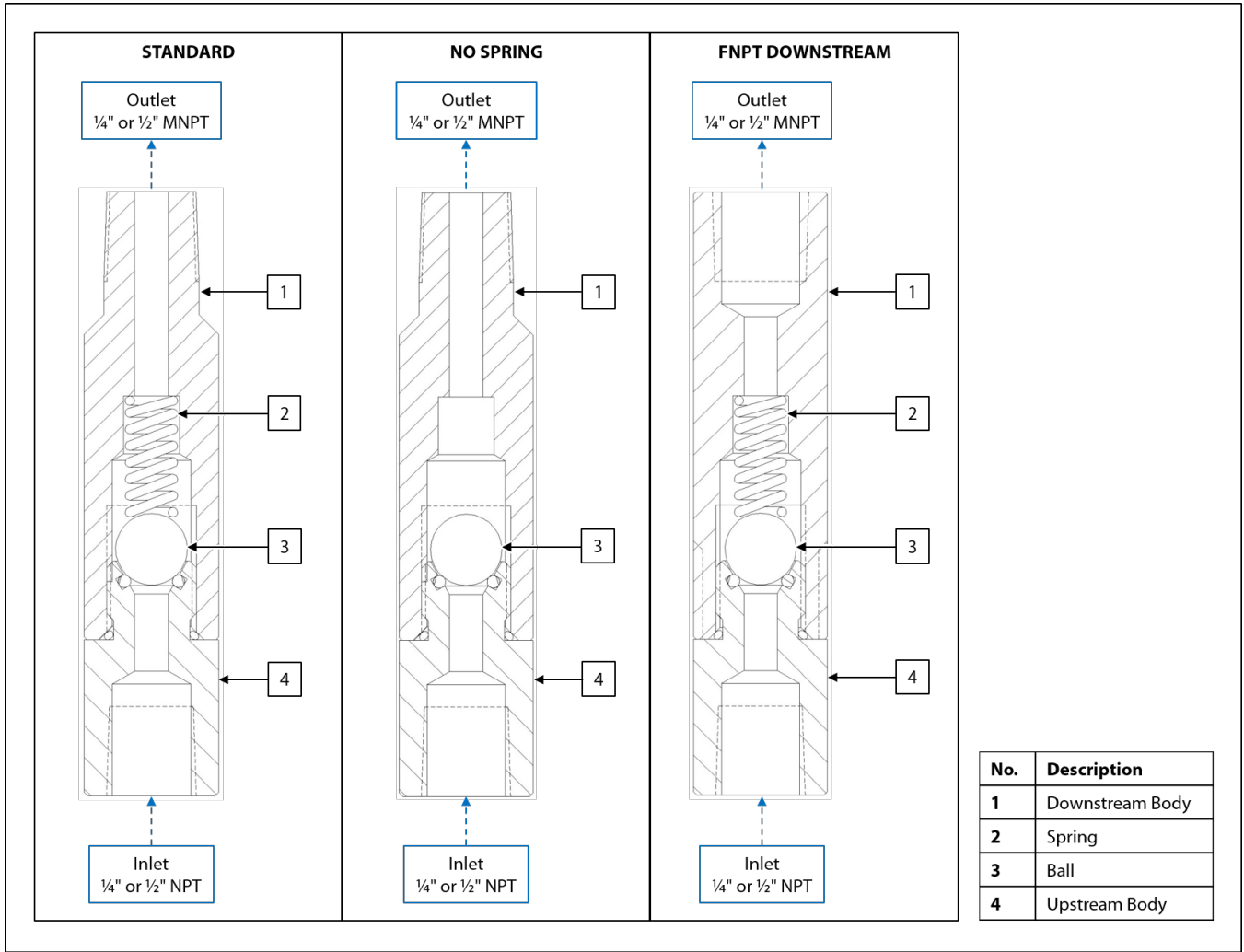
The specifications listed in this section are generalized for this equipment. Welker can modify the equipment according to your company's needs. **Please note that the specifications may vary depending on the customization of your equipment.**

Table 1: CV-1 Specifications

Products	Gases and Liquids Compatible With the Materials of Construction
Materials of Construction	316/316L Stainless Steel, Ceramic (Ball), PTFE, and Viton® Others Available
Maximum Allowable Operating Pressure	5000 psig @ -20 °F to 100 °F (344 barg @ -28 °C to 37 °C)
Connections	Inlet: ¼" or ½" FNPT Outlet: ¼" MNPT or FNPT
Spring Ranges	0–5 psig (0–0.3 barg) 0–50 psig (0–3.4 barg)
Options	No Spring CE Compliance

1.4 Equipment Diagram

Figure 1: CV-1 Diagram



SECTION 2: INSTALLATION & OPERATION

2.1 Before You Begin



After unpacking the unit, check the equipment for compliance and any damage that may have occurred during shipment. Immediately contact a Welker representative if you received damaged equipment.



When sealing fittings with PTFE tape, refer to the proper sealing instructions for the brand used.

2.2 Installation

1. Wrap the threads with PTFE tape.
2. Install the CV-1 in the line where single-direction flow is desired.



For models WITHOUT a spring, vertical installation is required.

3. Install the inlet in the upstream direction.
4. The CV-1 is now installed and operational.

3.1 Before You Begin

1. **Welker recommends that the unit have standard maintenance under normal operating conditions:** for *gas sampling* every six (6) months; and for *liquid sampling* every twelve (12) months. In cases of severe service, dirty conditions, excessive usage, or other unique applications that may lead to excess wear on the unit, a more frequent maintenance schedule may be appropriate.
2. Prior to maintenance or disassembly of the unit, it is advisable to have a repair kit available for repairs of the system in case of unexpected wear or faulty seals.



New seals supplied in spare parts kits should be lightly lubricated before being installed to ease the installation of the seals and reduce the risk of damage when positioning them on parts. Wipe excess lubricant from the seals, as it may adversely affect analytical instrument results.



For sample-exposed seals, Welker recommends non-hydrocarbon-based lubricants, such as Krytox®. For non-sample-exposed seals, Welker recommends either non-hydrocarbon-based lubricants or silicone-based lubricants, such as Molykote® 111.

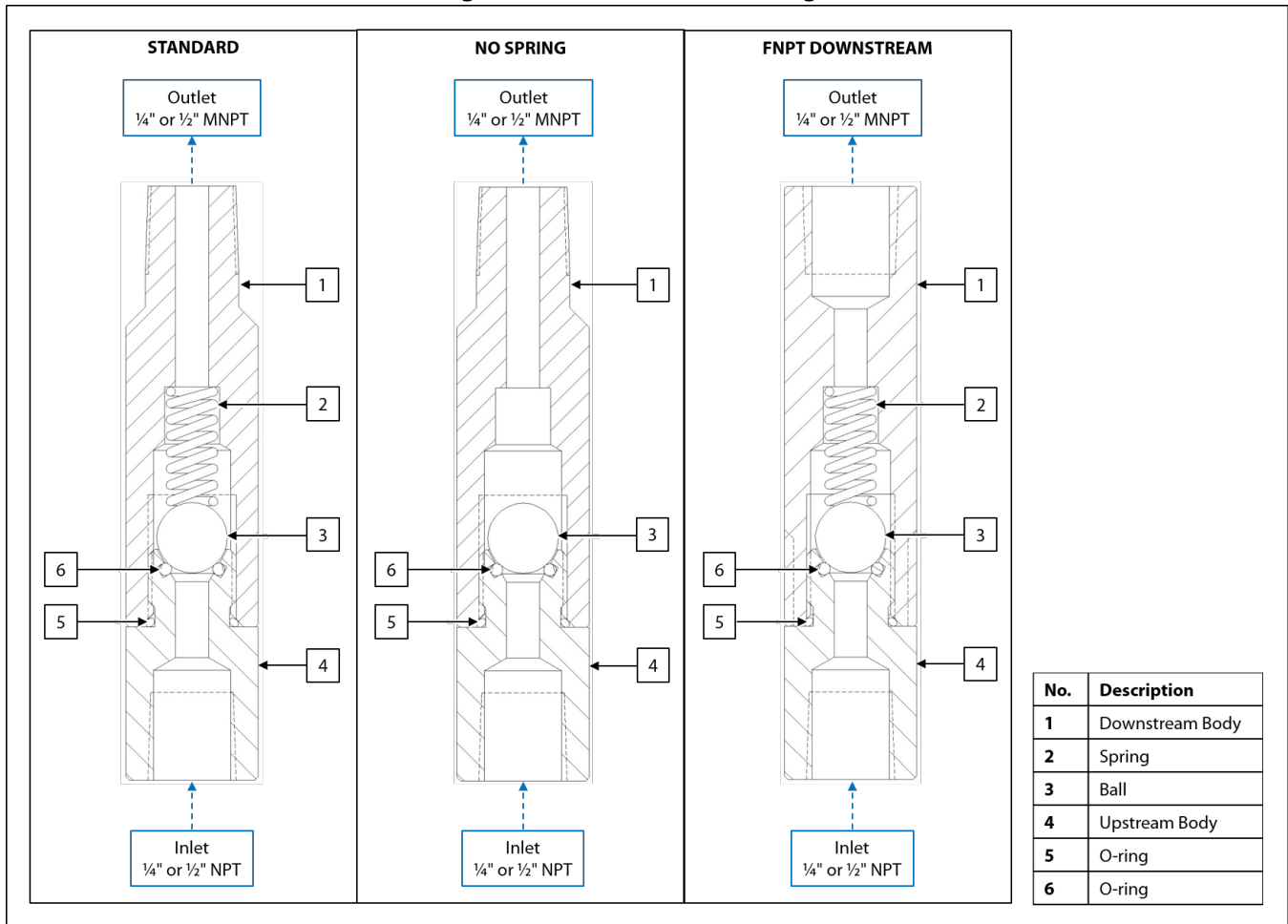


After the seals are installed, the outer diameter of shafts and inner diameter of cylinders may be lubricated to allow smooth transition of parts.

3. All maintenance and cleaning of the unit should be performed on a smooth, clean surface.
4. Welker recommends having the following tools available for maintenance. Please note that the exact tools required may vary by model.
 - a. Adjustable Wrench
 - b. Seal Pick

3.2 Maintenance

Figure 2: CV-1 Maintenance Diagram



1. Depressurize the line in which the CV-1 is installed.
2. Disconnect the upstream and downstream connections.
3. Unscrew the upstream body from the downstream body.
4. Remove the ball.
5. If applicable, remove the spring.
6. Replace the O-rings on the upstream body.
7. Inspect the ball for scratches or other damage. If scratches or other damage are present, replace the ball.
8. If applicable, inspect the spring for scratches or other damage. If scratches or other damage are present, replace the spring.
9. If applicable, install the spring to the downstream body.
10. Place the ball in the downstream body and on top of the spring, if applicable.
11. Screw the upstream body into the downstream body.
12. Maintenance is now complete. See *Section 2.2, Installation*, for instructions on installing the CV-1 and returning it to operation.

APPENDIX A: REFERENCED OR ATTACHED DOCUMENTS

Welker *Installation, Operation, and Maintenance (IOM) Manuals* suggested for use with this unit:

- None

Other *Installation, Operation, and Maintenance (IOM) Manuals* suggested for use with this unit:

- None

Welker drawings and schematics suggested for use with this unit:

- Assembly Drawing: AD021A[] (Standard CV-1)
- Assembly Drawing: AD021AC (CV-1 Without Spring)
- Assembly Drawing: AD022A[] (CV-1 With Female Downstream Connection)

